



5 Railroad Street • P. O.Box 359  
Newmarket, NH 03857  
Phone: (603) 659-4979  
Email: [mjs@mjs-engineering.com](mailto:mjs@mjs-engineering.com)

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*Site Analysis Narrative*

*Prepared For*

*Michael and Martha Mulhern*

*Phase 1 Preliminary Conceptual Consultation for Subdivision*

*Tax Map 10 / Lots 8-6, 91 Bagdad Road*

November 19, 2019

**Existing Site Conditions**

The subject property is located at 91 Bagdad Road. The parcel has 51.5' of frontage on Dover Road (Route 108), is accessed via a shared right of way (ROW) with 68.03' of frontage on Bagdad Road, and 51'+/- frontage on a ROW extending from Gerrish Drive to the westerly property boundary. These ROW's provide various degrees of access to the parcel. The current access to the single-family house on the parcel is via the (ROW), shared with lots 8-7 & 8-8. The main access to the parcel will be via the 50' ROW extending from the corner of Gerrish Drive and Ambler Way. This existing ROW is owned by the Town of Durham and was designated as future access to the subject parcel for the purposes of development and deeded to the Town of Durham when the Gerrish Dr. and Ambler Way subdivision was approved in 1972. The total parcel area is approximately 15.6 acres with approximately 2.0 acres within the Town of Madbury. The parcel is surrounded on the west, south and east by single family lots or subdivisions, and on the north by undeveloped woodland within the town of Madbury. The topography on the property slopes generally from south to north and northeast, with some small knolls within the center and east side. The highest point is approximately elevation 100 and the lowest point is approximately elevation 25 on the Madbury town line. The slopes range from 3% to 25% with an average slope across the parcel of approximately 6%. There is a large wetland of approximately 4+ acres adjacent to the westerly boundary and situated approximately 300' north of the southerly boundary then contiguous to the northerly property boundary within the Town of Madbury. The wetland is connected to an unnamed brook just off the parcel, which flows easterly into Gerrish Brook. The soils on the site range from moderately well drained glacial till on the higher knolls, with some small ledge outcrops to mostly moderately well drained silty marine sediments over most of the area. Poorly drained silty to clayey marine sediments occupy the wetlands with a narrow band of somewhat poorly drained soil around the perimeter. A high intensity soil survey has been completed on the site and is included in the site analysis plans. Overhead utilities currently service the one single family home via the ROW from Bagdad Road. The parcel is currently fully wooded with a small yard area around the existing house.

The development opportunities on the parcel include an area of approximately 2 – 2.5 acres of gently sloping to level topography for house construction. This area is to the north and northeast portion of the parcel and is directly adjacent to the access ROW. The majority of this area is interior to the parcel and will afford a wooded buffer to the surrounding properties. There is currently town water on Gerrish Dr. and Ambler Way, which is approximately 250' from the site.

The constraints on the site are largely due to the extensive wetland area, the wetland crossing and small associated ravine, and the wetland buffer setbacks. The single most restrictive constraint is a narrow wetland finger in the center of the parcel extending approximately 150' from the larger wetland complex into the otherwise usable area. Once the wetland buffers are added it restricts an otherwise larger developable area of the parcel. Other constraints include some minor ledge outcrops, and some small areas of steep slopes. The steep slopes are mostly on the fringes of the parcel and can be avoided.

The open space conservation potential of the site is high due to the larger wetland complex and marginal soils that surround this wetland. In addition, there are some irregular shaped and narrow areas of the parcel due to the lot line configuration that are mostly unusable and are also restricted from access due to the wetland and buffers. All these issues lend itself to significant conservation potential.

### The Development Proposal

The proposal is to develop the property for residential use. The development concept is proposed to be a "pocket neighborhood" providing high quality construction of small to moderate sized homes. *A pocket neighborhood is a planned community that consists of a grouping of residences that is centered around a courtyard, common garden or open space designed to promote a close-knit sense of community and neighborliness with an increased level of contact.* The developable area within this parcel lends itself to this type of development due to the configuration of the parcel and location of the wetland. Albeit, constraints exist, this type of development can work. The following table provides a calculation of the "usable area" of the parcel based on the requirements of Section 175-56 F of the Durham Zoning Ordinance. The area of usable and unsuitable soils has been determined by HISS mapping and the delineation is included on the site analysis map.

Calculation of Usable Area, Map 10 Lot 8-6

SOIL/AREA TYPE	AREA	UNSUITABLE AREA	USABLE AREA
V/P, Poorly, S/P drained soils	212,108.97	212,108.97	0.00
Floodways and 100-year floodplain	0	0	0.00
Ledge at 0"-20" & 0"-40"	11,170.27	11,170.27	0.00
50% of soils w/ledge at 20"-40"	0	0	0.00
>25% Slopes	16029.79	16029.79	0.00
50% of 15 % to 24% slopes	62,990.28	31,495.14	31,495.14
ROW & Easements that restrict development	16,029.27	16,029.27	0.00
Stream Channels	0.00	0.00	0.00
Isolated wetland < 5000 SF	0.00	0.00	0.00
<15% slope and no restrictions	288,983.42	0.00	288,983.42
Totals	607312.10	286833.44	320,478.56
		Net usable area	320,478.56
		Min lot size	40,000
		No. Units	8.01

Based on the HISS mapping of the parcel, the table shows the maximum number of units that can be developed in the subdivision to be a total of 8 units. A density bonus is allowed in accordance with Section 175-57 A.1 of the Durham Zoning Ordinance. Applying this density bonus for 1-4 bedroom senior housing allows an increase in density of 8 units for a total of 16 units if all units are designated as senior housing. The intent of the owner is not to apply the bonus to all the units, nor will 16 units fit on the property. A small density bonus may be used, and the extent of the density bonus will be determined during the design process.

The development will include a road extension from the corner of Gerrish Drive and Ambler Way to the property. The portion of the roadway from the existing town road to the split in the access road is proposed to be designed as a town road. This length is approximately 500' into the site. The intersection or split will be designed to provide turn around space for emergency vehicles, and larger commercial vehicles. The remainder of the road system is proposed to be designed as a driveway with a clear width of 20' and a paved width of 12' – 14'. This portion of the roadway system will be private and is intended to minimize the disturbance and impervious surfaces. The existing town roads have adequate capacity for the development of this site and there are no sight distance issues. According to the latest Institute of Traffic Engineers, (ITE) Trip Generation manual for traffic generation from residential developments, this proposed development of 8-12 units will generate between 6 – 9 average vehicle trip ends in the peak AM hour, and 8 – 12 average vehicle trip ends in the peak PM hour. This is an insignificant amount of traffic for the existing and proposed road system and will not negatively impact the capacity of the roads or degrade the existing neighborhood, which has a total of 24 lots. A traffic report will be submitted with the preliminary design review submission.

If you have any questions or need additional information, please do not hesitate to contact me.

Sincerely;

A handwritten signature in black ink that reads "Michael J. Sievert". The signature is written in a cursive, flowing style.

Michael J. Sievert PE  
MJS Engineering